

**REMARKS**

Claims 1-3, 5-13, 15-35, and 39-40 are pending. Claims 1 and 17-19 are amended.

Claim 14 is cancelled without prejudice.

**The 35 U.S.C. § 112 Rejections are Moot****A. The claims are definite.**

Claims 1-3, 5-13, 20-33, and 39-40 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In view of the above amendment to claim 1 and the following remarks, Applicants believe the rejection is moot and request withdrawal of the rejection.

The intermediate layer of claim 1 was amended with the subject matter of claim 14 to specify that the “nylon copolymer” is nylon 6,66 copolymer. Thus, no perceived indefiniteness regarding a nylon copolymer combined with an amorphous nylon can exist. Nylon 6,66 copolymers have a recognizable melting point and are not amorphous. The inner layer is also further defined to specify that it is a heat sealing layer to further define the invention. The basis for this clarification may be found in the application e.g. on page 3, first paragraph and page 7, lines 15-20. No new matter has been added.

**The Claims are Patentable Over the Cited Art**

Briefly stated, Applicants’ invention is directed to thermoformable multi-layer films having enhanced resistance to abrasion, puncture, and impact, especially at low temperatures. In relation to traditional forming films, Applicants’ invention reduces the

incidence of film failure, especially at the corners, from the combination of product bulk, weight, cooling to 0°C, impact, and abrasion. The claimed films include at least an outer, intermediate, and inner layer. The position of the outer layer is defined relative to the position of the inner layer. The inner layer is a heat sealing layer and as such is recognized as a surface layer and the outer layer as disclosed in the example and drawings may also optionally be a surface layer. The inner, outer and intermediate layers are bonded at the two resulting interfaces with one or more adhesives.

The claimed thermoformable films are useful in forming processes which utilize heat, such as vacuum skin packaging or thermoforming, where a package is formed and sealed. In thermoforming, the film is given a three dimensional shape by drawing it into a mold with heat applied followed by cooling so that the film assumes the shape of the mold. In vacuum skin packaging, a vacuum is used to draw the heated film around the item to be packaged prior to sealing so that the item acts as the mold. Unlike a heat-shrinkable film, the film of current invention is not cooled, reheated and stretched and cooled again prior to use and then heat shrunk around an item. The claimed thermoformable films do not significantly shrink when heated, whereas heat shrinkable films such as those disclosed by *Wilhoit* commonly shrink more than 20% and often preferably in excess of 30-40% in each direction.

**§ 103. The Claims are Not Obvious in View of the Cited Art**

The 35 USC § 103(a) rejection of claims 1-3, 5-9, 20-22, 27-35 and 39-40 should be withdrawn because the invention defined by the claims would not have been obvious in view of the cited prior art. Even if a motivation to combine these references existed, the resulting combination is not the present invention.

As outlined above with regards to § 112, claim 1 has been amended to incorporate the limitations regarding nylon 6,66 as the copolymer from dependent claim 14. Thus, paragraphs 1-6 and 8 of the §103(a) rejection are no longer applicable. Claim 1 has also been further defined to specify that the inner layer is a heat sealing layer. Paragraph 7 of the Office Action is addressed as follows.

*Shepard* does not teach, describe or suggest the present outer layer that includes the required VLDPE and compatibilizer as defined in claim 1. Instead, *Shepard* addresses the use of multiple nylon layers including an outer surface layer, such as layer 15. *Shepard* states that: "Layer 15 is a nylon outer layer" that "may comprise amorphous nylon copolymer,...which is blended with one or more various other nylons." (See Col. 8, lines 36-45); and that Layer 15 may comprise an anti-blocking agent in a nylon carrier composition "which may comprise any of various nylons including nylon 6, nylon 6,6, or nylon 6,66, is from 35 to 80 percent antiblocking agent and 65 to 30 percent nylon polymer." (See Col. 8, lines 61 to Col. 9, lines 1- 12.) It should be apparent though that nothing in *Shepard* renders the instant invention obvious to a person of ordinary skill in the art.

Present Claim 1 requires a specific VLDPE/compatibilizer layer in combination with a specific nylon 6,66 and amorphous nylon blend intermediate layer. This selection of the proper nylon blend in combination with the proper VLDPE blend to address the problems of conventional thermoformable films, such as described on Page 2, lines 8-13 of the present application and as described above, cannot be found in *Shepard*. Furthermore, *Shepard* provides no suggestion regarding how one should combine Applicant's required outer and intermediate layers to provide a thermoformable film having enhanced resistance to abrasion, puncture, and impact, especially at low temperatures. *Shepard* fails to suggest either the problem solved by Applicants' invention or the solution to the problem as defined in claim 1. Therefore *Shepard* cannot make the present invention obvious and fails to provide any motivation to combine its teachings with another reference in a manner that could make the present invention obvious.

The present application also addresses a leak problem described on page two, lines 8-13 of the present application and the cause of this problem is elaborated upon at page 9, last paragraph through page 10. At the same time that this leak problem is addressed the optical properties of the package must have good gloss and clarity for consumer acceptance and the compatibilizer prevents hazing in the blend which would result in an undesirable appearance. See application at page 5, lines 14-18.

The Examiner has not shown where the *Shepard* reference suggests either the problem or the solution and therefore nothing in *Shepard* has been shown to provide the motivation to seek out another reference for combination therewith.

To find the claimed outer layer, which is missing from *Shepard*, the office action cites *Wilhoit* '740. The *Wilhoit* reference is a broad disclosure teaching useful polymeric blends and films and *Wilhoit* describes at length heat shrinkable films. Thus, *Wilhoit* '740 is a broad disclosure and teaching, yet its examples focus on making a heat shrinkable film using a unique blend having enhanced properties, most notably excellent sealing properties for use in a heat sealing layer. (Col. 3, lines 7-15). Such heat shrinkable films are not suitable for thermoforming applications because of their high shrinkage when exposed to the heat attendant to the thermoforming process. While the *Wilhoit* blend may include both the VLDPE and EVA of Applicants' outer layer, *Wilhoit* also includes additional required components the combination of which makes it especially useful as a heat sealing layer. (Col. 7, lines 17-19). The *Wilhoit* reference contains no suggestion or motivation to modify its VLDPE blend in accord with the claimed invention where a specific VLDPE and EVA containing blend with compatibilizer is employed as an outer layer in conjunction with an intermediate layer of a specified blend of amorphous nylon and nylon 6,66 to yield the claimed invention. *Wilhoit* is void of any reference to nylon 6,66. It is not readily apparent how a person of ordinary skill in the art of making thermoforming films would combine the teachings of *Shepard* and *Wilhoit* to arrive at the presently claimed invention or where the motivation to do so may be found absent the teachings of the present application.

Neither *Bekele* reference provides the teachings lacking from *Shepard* and *Wilhoit* that would motivate one to use the claimed VLDPE outer layer blend with the claimed nylon intermediate layer blend. One cannot ignore the other layers and materials taught by *Bekele*.

while only selecting the nylon layer to combine with *Shepard* and *Wilhoit* without a motivation to do so. Neither the references nor the Office Action provide any motivation, outside of hindsight gained from Applicants' disclosure, to select a specific blend of nylons from *Bekele*, while ignoring its other teachings, and combine this blend in a specific layer with a layer selected from the teachings of *Wilhoit* using a selected specific optional four component blend from *Wilhoit*, and not using this blend as a heat sealing layer.

While Applicants' component polymers may be found in the references, there is no suggestion or motivation to combine them in a way to obtain Applicants' invention without resorting to impermissible hindsight. In fact, a combination of the fair teachings of the references as a whole results in the 7+ layer film of *Shepard* having its inner heat sealing layer (16, 26, 37, 46, or 56) replaced with the VLDPE blend of *Wilhoit* '740, most likely without the presence of EVA. Furthermore, how the teachings of either or both *Bekele* references would be applied is extremely speculative. For example, if one were to turn to *Bekele* '706 it is reasonable to ask whether nylon would even be selected? The overwhelming preference of that '706 reference would seem to be the first listed and exemplified EVOH (see *Bekele* '706 col.3, lines 53-59 and also Table 2 which exemplifies 41 film samples all containing EVOH and none of the 41 containing nylon). A person of ordinary skill in the art would almost certainly read *Shepard* and *Bekele* together to suggest that EVOH is the material of choice.

For both *Bekele* references another reasonable question is which nylon to choose and whether to select a blend and if so of which nylons? In *Bekele* '706 the only reference to

blends which might include amorphous nylon appears to be at col. 3, lines 53 to 59 where a "shopping list" of oxygen barrier materials is presented including EVOH as well as nylon homopolymers and copolymers. This list ends with the language "...and blends thereof." Interestingly the only claims of the same *Bekele* ' 706 patent that refer specifically to amorphous nylon are claims 5 and 6, neither of which refers to blends.

In *Bekele* ' 009 another question is whether to choose to use the amorphous nylon alone or in a blend? If in a blend, then with a nylon homopolymer or copolymer? If a copolymer, then with which? 6/12, 6/66, or 6/69? (See ' 009 col. 6. lines 15-54.) There is simply no basis for selection. This is not the claimed invention. Also in *Bekele* ' 009 a 9 layer film is claimed having a fourth layer and a sixth layer each of amorphous nylon and both connected by an EVOH layer. EVOH is not an anhydride modified adhesive as defined in present claims 31 and 32. Neither is there any suggestion that a portion of the thermoforming film taught in *Shepard* could be successfully combined with the heat-shrink film of *Wilhoit* to form the superior thermoforming films of independent claim 1. Once again, the claimed invention does not result.

Applicants respectfully submit that the applied patents are not properly combinable to form a basis for rejection of Applicants' claims and do not form the claimed invention, even in combination. The references fail to provide any suggestion or motivation to use a VLDPE/EVA/compatibilizer layer in adhesive combination with the claimed nylon blend layer, and claimed heat sealing layer to form a thermoforming film with the superior properties disclosed. Thus, the rejection under § 103 should be withdrawn.

Applicants' remaining claims depend from independent claim 1. Therefore, the above remarks apply equally to the dependent claims. The claimed amounts of polymers, including the nylon polymer blend layer and the VLDPE containing layer amounts, as well as other specific limitations regarding the specificity of components, such as anhydride modified adhesives or use of additional components such as fluoropolymers or the package claims 39 and 40, are also nonobvious. The cited references would not be combined to render obvious these specific embodiments found in the dependent claims absent applicants' instant disclosure. In view of these and other differences, it cannot be said that the cited references would have made the claimed thermoformable films obvious. As such, the rejection should be withdrawn.

**Conclusion**

The Applicants have overcome each of the rejections. The application is therefore in condition for allowance and early notification of allowance is respectfully requested. If, for any reason, the Examiner believes that the amendments and remarks do not put the claims in condition for allowance, the undersigned attorney can be reached at (312) 321-4898 to resolve any remaining issues.

Respectfully submitted,



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